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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/579,735

Filing Date: May 18, 2006

Appellant(s): SON ET AL.

Carol Druzick
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed September 9, 2010 appealing from the Office action mailed April 9, 2010.

(1) Real Party in Interest

The examiner has no comment on the statement, or lack of statement, identifying by name the real party in interest in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The following is a list of claims that are rejected and pending in the application:

Claims 1-4 and 6-12.

(4) Status of Amendments After Final

The examiner has no comment on the appellant's statement of the status of amendments after final rejection contained in the brief.

(5) Summary of Claimed Subject Matter

The examiner has no comment on the summary of claimed subject matter contained in the brief.

(6) Grounds of Rejection to be Reviewed on Appeal

The examiner has no comment on the appellant's statement of the grounds of rejection to be reviewed on appeal. Every ground of rejection set forth in the Office action from which the appeal is taken (as modified by any advisory actions) is being maintained by the examiner except for the grounds of rejection (if any) listed under the

subheading "WITHDRAWN REJECTIONS." New grounds of rejection (if any) are provided under the subheading "NEW GROUNDS OF REJECTION."

(7) Claims Appendix

The examiner has no comment on the copy of the appealed claims contained in the Appendix to the appellant's brief.

(8) Evidence Relied Upon

| | | |
|--------------|--------------------|--------|
| 4,817,233 | Waldhauser | 4-1989 |
| 4,426,751 | Nordeen | 1-1984 |
| 2003/0145425 | Fernandez-Grandizo | 8-2003 |
| | Martinez | |

(9) Grounds of Rejection

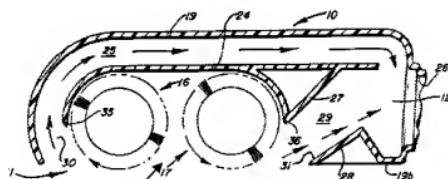
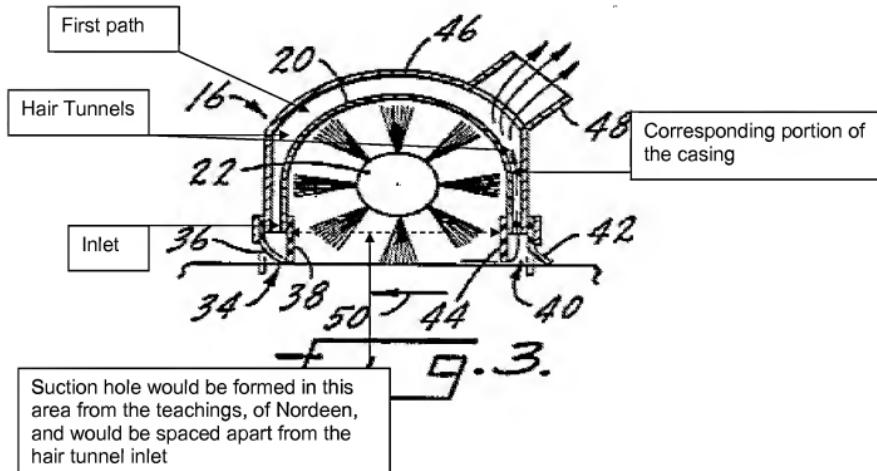
The following ground(s) of rejection are applicable to the appealed claims:

Claims 1-4, 6 and 8-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Waldhauser (4817233) in view of Nordeen (4426751).

In reference to claim 1, Waldhauser discloses a vacuum cleaner, comprising: a suction head (16) installed at a front end of a suction path (48), wherein a vacuum pressure is generated by a suction motor (Column 1, Lines 41-43) for drawing in substances, a brush (22) is rotatably installed in the suction head and is configured to rotatably contact a surface to be cleaned (Figure 3 or see figure below) and at least one hair tunnel (see figure below) is formed in the suction head, wherein the at least one hair tunnel

preferentially draws thin and long substances from the surface being cleaned, but lacks, mounting the rotatable brush in a suction hole that is formed in a bottom surface of an outer casing of the suction head for drawing substances through the suction hole and into the suction path, and wherein an inlet (see figure below) into the at least one hair tunnel and an inlet into the suction hole are spaced apart from each other on the bottom surface of the outer casing with a corresponding portion of the bottom surface of the outer casing positioned therebetween such that the brush installed in the suction hole does not interfere with the at least one hair tunnel. However, Nordeen teaches that it is old and well known in the art to form a brush housing (24) with a suction hole (see figure below) and with a suction opening (29) thereby allowing substances to be drawn in through said suction hole, through said suction opening and into a suction path (26). It would have been obvious to one of ordinary skill in the art to modify the brush housing (20), of Waldhauser, with the known technique of forming a brush housing with a suction hole formed therein and with a suction opening thereby allowing substances to be drawn in through said suction hole, through said suction opening and into a suction path, as taught by Nordeen, and the results would have been predictable. In this situation, one could improve the transfer of material from the brush to the suction path. The examiner also notes that the limitations of having an inlet into the at least one hair tunnel and an inlet into the suction hole are spaced apart from each other on the bottom surface of the outer casing with a corresponding portion of the bottom surface of the outer casing positioned therebetween such that the brush installed in the suction hole

does not interfere with the at least one hair tunnel would be produced in the combination (as shown below).



In reference to claim 2, Waldhauser also shows that the at least one hair tunnel is linked to the front end of the suction path by a first path (see figures above) that is isolated from second path (i.e. 29 as taught by Nordeen) that links the suction hole to the front end of the suction path in the suction head (see figures above).

In reference to claim 3, Waldhauser also shows that the inlet of the at least one hair tunnel surrounds the suction hole, with the corresponding portion of the outer casing of the suction head positioned therebetween (see figure above).

In reference to claim 4, Waldhauser also shows that the inlet of the at least one hair tunnel is positioned at one of a front portion or a rear portion of the suction hole in a head progress direction corresponding to a movement direction of the suction head (Figures 3 and 4).

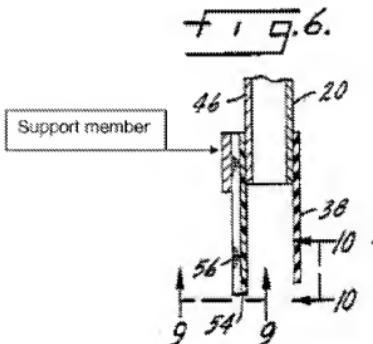
In reference to claim 6, Waldhauser also discloses a first sweeper (36) that protrudes downward from the bottom surface of the outer casing along a first peripheral edge of the inlet of the at least one hair tunnel, and a second sweeper (38) that protrudes downward from the bottom surface of the outer casing along a second peripheral edge of the inlet of the at least one hair tunnel opposite the first peripheral edge, wherein the second peripheral edge is closer to the suction hole than the first peripheral edge.

In reference to claim 8, Waldhauser also shows that the first and second sweepers are formed in a comb-tooth shape (Figures 9 and 10).

In reference to claim 9, Waldhauser also teaches that the sweepers can be formed with various shapes and sizes therefore obviously if one were to select the first sweeper as seen in figure 10 and the second sweeper as shown in figure 9 that obviously the interval of the comb teeth of the second sweeper as seen in figure 9 would be smaller than that of the comb teeth of the first sweeper as seen in figure 10.

In reference to claim 10, Waldhauser also teaches that the comb teeth of the first sweeper can vary in size (Figure 6) therefore obviously one could select the length of the teeth of the first sweeper to be longer than those of the second sweeper depending on the specific needs of a user.

In reference to claim 11, Waldhauser also shows that the some of the comb teeth of the first sweeper comprise a support member for reducing an operation resistance by the first sweeper (see figure below).



In reference to claim 12, Waldhauser also shows at least one sweeper (36) provided at the inlet of the at least one hair tunnel, wherein the at least one sweeper extends downward from the bottom surface of the outer casing at a peripheral edge portion of the inlet of the at least one hair tunnel (Figure 3).

Claim 7, is rejected under 35 U.S.C. 103(a) as being unpatentable over Waldhauser (4817233) in view of Nordeen (4426751) and Fernandez-Grandizo Martinez (2003/0145425). Waldhauser discloses the claimed invention previously mentioned above, but lacks, having a second sweeper is formed in a group bristle shape with a predetermined width. However, Fernandez-Grandizo Martinez teaches a technique of forming a second sweeper (106) in a group bristle shape with a predetermined width (Figure 4). It would have been obvious to one of ordinary skill in the art to modify the second sweeper, of Waldhauser, with the known technique of forming a second sweeper in a group bristle shape with a predetermined width, as

taught by Fernandez-Grandizo Martinez, and the results would have been predictable. In this situation, one could provide a sweeper that can easily be re-configured for cleaning a wide variety of working surfaces.

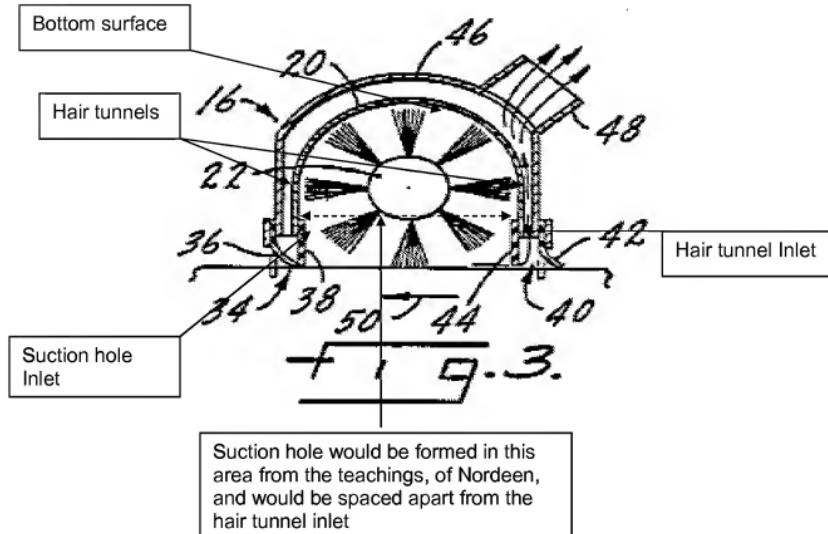
(10) Response to Argument

Applicants contend, on page 10, of the appeal brief that, **"In Waldhauser's floor scrubber, suction force is conveyed through the openings defined by the front and rear squeegees 34/40. Suction force is not conveyed through the housing 20 of the scrub head 16 in which the brush 22 is installed. Rather, Waldhauser specifically discloses that cleaning fluid is directed into the housing 20 by the tubes 26 and onto the brush 22 so that the brush 22 can use the cleaning fluid to clean the floor as it rotates. Thus, the brush 22 is necessarily isolated from any type of suction path which would draw this fluid away from the floor before the brush 22 was able to use the fluid to actually clean the floor. A suction flow through the brush 22/brush housing 20 would destroy the originally intended utility and functionality of Waldhauser's floor scrubber."** However, the examiner respectfully disagrees with this statement. The intended utility, of Waldhauser, would not be destroyed because brush (22) would still function as a cleaning brush. By including a suction hole within the brush housing, as taught by Nordeen, one could further improve the transfer of material from the brush to the vacuum source (see abstract of Nordeen which discusses the advantage of including transfer passages

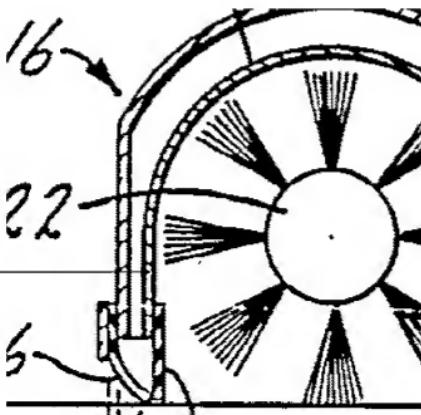
within the brush housing) therefore since all of the limitations of the claims have been met the examiner believes that the rejection is proper.

Applicants contend, on page 11, of the appeal brief that, “**Further, essentially the entire bottom of Waldhauser’s scrub head 16 is open, both at the fully open bottom face of the housing 20 in which the brush 22 is installed, and at the open bottom ends defined by the front and rear squeegees 34 and 40.** In an interview conducted on July 8, 2010, the Examiner asserted that the housing 20 has an inverted U shape, and that the bottom tip of the housing 20 (essentially, the end portion of the wall of the housing 20 that extends horizontally between the inner and outer side walls of the housing 20) constitutes the bottom surface of the housing 20/scrub head 16. Applicants respectfully disagree, and respectfully submit that this is an unreasonably broad interpretation of Waldhauser, and made only in light of the disclosure of the present application. In particular, Applicants maintain the position that the scrub head 16/housing 20 has no discernable bottom surface, and thus there is no bottom surface which separates an inlet into the space in which the brush 22 is positioned (i.e., the suction hole), and an inlet into either of the squeegees 34 and 40 (compared in the Office Action to the claimed at least one hair tunnel). Thus, Waldhauser neither discloses nor suggests at least one hair tunnel formed in the suction head, wherein an inlet into the at least one hair tunnel and an inlet into the suction hole are spaced apart from each other on the bottom surface of the outer casing with a corresponding

portion of the bottom surface of the outer casing positioned therebetween, as recited in independent claim 1.” However, the examiner respectfully disagrees with this statement. The examiner has clearly shown where the bottom surface is formed and how the suction hole is formed when Waldhauser is combined with Nordeen (see the figures below along with the previously supplied figures above). Thus, when brush housing (20) is modified to include a suction opening (29) therein, as taught by Nordeen, an inlet into the at least one hair tunnel and an inlet into the suction hole would be spaced apart from each other on the bottom surface of the outer casing with a corresponding portion of the bottom surface of the outer casing positioned therebetween (see figures below along with the previously supplied figures above) therefore since all of the limitations of the claims have been met the examiner believes that the rejection is proper.



Corresponding portion of casing that is positioned between the suction hole inlet and the hair tunnel inlet



Applicants contend, on page 12, of the appeal brief that, **“More specifically, as set forth above, the space in which Waldhauser's brush 22 is installed in the housing 20 is necessarily isolated from any type of suction path which would draw any of the fluid away from the floor, as the cleaning effectiveness of Waldhauser's floor scrubber relies on the cleaning fluid reaching the floor and being agitated by rotation of the brush 22. Incorporation of a suction hole into this portion of Waldhauser's scrub head 16 by simply cutting a hole in an upper portion of the brush housing 20 would necessarily destroy the originally intended utility and functionality of Waldhauser's floor scrubber. Rather, it is respectfully submitted that Waldhauser specifically teaches away from such a modification. Thus, it is respectfully submitted that it would not have been obvious to modify**

Watdhauser's scrub head 16 in the manner suggested in the Office Action." However, the examiner respectfully disagrees with this statement. There is absolutely nothing within the prior art that would prevent one from combining them with each other. In fact, the examiner maintains that the prior art may be easily combined with each other because one reference (i.e. Waldhauser) has a brush housing with a rotatable brush therein and the other (i.e. Nordeen) teaches of including a suction opening (29) within a brush housing (24) for improving the transfer of material from within the brush housing therefore since all of the limitations of the claims have been met the examiner believes that the rejection is proper.

Applicants contend, on page 13, of the appeal brief that, "**Nordeen suffers deficiencies similar to those set forth above with respect to Waldhauser. That is, as with Waldhauser, substantially the entire bottom surface of Nordeen's nozzle 10 is open, with the entrances 30 and 31 into the passages 25 and 29 and the space in which the brushes 16 and 17 are installed sharing a single, large opening.** Like Waldhauser, Nordeen neither discloses nor suggest that an inlet into the at least one hair tunnel and an inlet into the suction hole are spaced apart from each other on the bottom surface of the outer casing with a corresponding portion of the bottom surface of the outer casing positioned therebetween such that the brush installed in the suction hole does not interfere with the at least one hair tunnel, as recited in independent claim 1. For at least these reasons, it is respectfully submitted that Nordeen fails to overcome the deficiencies of

Waldhauser." However, the examiner respectfully disagrees with this statement. The inlet of the suction hole, of Waldhauser, is separated from the inlet of the hair tunnel by the portion of the casing which is clearly seen in the figures above. The other specific structure pertaining to Nordeen is considered moot because the claimed structure has already been met by Waldhauser therefore since all of the limitations of the claims have been met the examiner believes that the rejection is proper.

Applicants contend, on page 14, of the appeal brief that, "**As set forth above, Waldhauser and Nordeen, either alone or in combination, neither disclose nor suggest the claimed suction hole, and thus necessarily neither disclose nor suggest a second path linking such a suction hole to a front end of a suction path, as recited in claim 2. Thus, Waldhauser and Nordeen, either alone or in combination, neither disclose nor suggest the features of claim 2, either alone or in combination with claim 1, and therefore claim 2 is allowable for this additional reason. Accordingly, the rejection of claim 2 should be reversed.**" However, the examiner respectfully disagrees with this statement. The first path, of Waldhauser (shown above), is isolated from a second path (which would be formed as passage 29, as taught by Nordeen) thereby meeting the limitations of the claims therefore since all of the limitations of the claims have been met the examiner believes that the rejection is proper.

Applicants contend, on page 15, of the appeal brief that, **"No portion of the casing 16 is positioned between the open face of the housing 20 and either of the inlets into the squeegees 34/40.** Likewise, **no portion of the outer casing of Nordeen's nozzle 10 (with a casing defined by a top and bottom wall 19 and 19b) is positioned between the opening into the area in which the brushes 16, 17 are installed and the entrances 30, 31 into the passages 25, 29.** Thus, claim 3 is allowable for this additional reason. Accordingly, the rejection of claim 3 should be reversed." However, the examiner respectfully disagrees with this statement. Again, the portion of casing (20) is clearly positioned between the inlet of the hair tunnel and the inlet of the suction hole (as previously shown above) therefore since all of the limitations of the claims have been met the examiner believes that the rejection is proper.

Applicants further contend, on page 15, of the appeal brief that, **"For example, dependent claim 4 recites that the inlet of the at least one hair tunnel is positioned at one of a front portion or a rear portion of the suction hole in a direction corresponding to a movement direction of the suction head. As set forth above, Waldhauser and Nordeen, either alone or in combination, neither disclose nor suggest the claimed suction hole, and thus necessarily neither disclose nor suggest that the inlet of the at least one hair tunnel is positioned at one of a front portion or a rear portion of such a suction hole, as recited in claim 4."** However, the examiner respectfully disagrees with this statement. The hair tunnels are clearly

seen in the figures above as being provided at front and rear portions of the suction hole (i.e. left and right sides) therefore since all of the limitations of the claims have been met the examiner believes that the rejection is proper.

Applicants contend, on page 16, of the appeal brief that, **“As set forth above, Waldhauser and Nordeen, either alone or in combination, neither disclose nor suggest the claimed suction hole, and thus necessarily neither disclose nor suggest that a second peripheral edge (of at least one hair tunnel) is closer to such a suction hole than the a peripheral edge, as recited in claim 4.”** However, the examiner respectfully disagrees with this statement. The second peripheral edge (formed as the portion closer to element (38), as seen in Figure 3) of the hair tunnel is closer to the suction hole than the first peripheral edge (formed as the portion closer to element (36), as seen in Figure 3) therefore since all of the limitations of the claims have been met the examiner believes that the rejection is proper.

Applicants contend, on page 17, of the appeal brief that, **“For example, dependent claim 8 recites that the first and second sweepers are formed in a comb-tooth shape. As set forth above, Waldhauser and Nordeen, either alone or in combination, neither disclose nor suggest the features of claim 8 in combination with claim 6 and/or claim 12 and/or claim 1, and thus claim 8 is allowable for this additional reason. Accordingly, the rejection of 8 2 should be reversed.”** However, the examiner respectfully disagrees with this statement.

Waldhauser does show that the first and second sweepers are formed in a comb-tooth shape (Figures 9 and 10) therefore since all of the limitations of the claims have been met the examiner believes that the rejection is proper.

Applicants further contend, on page 17, of the appeal brief that, **"For example, dependent claim 9 recites that an interval between adjacent comb teeth of the second sweeper is less than an interval between adjacent comb teeth of the first sweeper. As set forth above, Waldhauser and Nordeen, either alone or in combination, neither disclose nor suggest the features of claim 9 in combination with claim 8 and/or claim 6 and/or claim 12 and/or claim 1, and thus claim 9 is allowable for this additional reason. Accordingly, the rejection of claim 9 should be reversed."** However, the examiner respectfully disagrees with this statement. Waldhauser teaches that the sweepers can be formed with various shapes and sizes (Figures 9 and 10) therefore obviously if one were to select the first sweeper as seen in figure 10 and the second sweeper as shown in figure 9 that obviously the interval of the comb teeth of the second sweeper as seen in figure 9 would be smaller than that of the comb teeth of the first sweeper as seen in figure 10 therefore since all of the limitations of the claims have been met the examiner believes that the rejection is proper.

Applicants contend, on page 18, of the appeal brief that, “**For example, dependent claim 10 recites that the comb teeth of the first sweeper are longer than comb teeth of the second sweeper. As set forth above, Waldhauser and Nordeen, either alone or in combination, neither disclose nor suggest the features of claim 10 in combination with claim 9 and/or claim 8 and/or claim 6 and/or claim 12 and/or claim 1, and thus claim 10 is allowable for this additional reason. Accordingly, the rejection of claim 10 should be reversed.**” However, the examiner respectfully disagrees with this statement. Waldhauser also teaches that the comb teeth of the first sweeper can vary in size (Figure 6) therefore obviously one could select the length of the teeth of the first sweeper to be longer than those of the second sweeper depending on the specific needs of a user therefore since all of the limitations of the claims have been met the examiner believes that the rejection is proper.

Applicants further contend, on page 18, of the appeal brief that, “**For example, dependent claim 11 recites that some of the comb teeth of the first sweeper comprise a support member that reduces an operation resistance by the first sweeper. As set forth above, Waldhauser and Nordeen, either alone or in combination, neither disclose nor suggest the features of claim 11 in combination with claim 10 and/or claim 9 and/or claim 8 and/or claim 6 and/or claim 12 and/or claim 1, and thus claim 11 is allowable for this additional reason. Accordingly, the rejection of claim 11 should be reversed.**” However, the examiner respectfully

disagrees with this statement. The examiner has provided a figure, on page 8, of this action that clearly shows that the first sweeper includes a support therefore since all of the limitations of the claims have been met the examiner believes that the rejection is proper.

Applicants contend, on page 19, of the appeal brief that, **"For example, dependent claim 12 recites at least one sweeper provided at the inlet of the at least one hair tunnel, wherein the at least one sweeper extends downward from the bottom surface of the outer casing at a peripheral edge portion of the inlet of the at least one hair tunnel. As set forth above, Waldhauser and Nordeen, either alone or in combination, neither disclose nor suggest the features of claim 12 in combination with claim 1, and thus claim 12 is allowable for this additional reason. Accordingly, the rejection of claim 12 should be reversed."** However, the examiner respectfully disagrees with this statement. Waldhauser does show that at least one sweeper (36) is provided at the inlet of the at least one hair tunnel, wherein the at least one sweeper extends downward from the bottom surface of the outer casing at a peripheral edge portion of the inlet of the at least one hair tunnel (Figure 3) therefore since all of the limitations of the claims have been met the examiner believes that the rejection is proper.

Applicants further contend, on page 19, of the appeal brief that, **"For example, dependent claim 7 recites that the second sweeper is formed in a group bristle**

shape with a predetermined width.” However, the examiner respectfully disagrees with this statement. Fernandez-Grandizo Martinez does teach a technique of forming a second sweeper (106) in a group bristle shape with a predetermined width (Figure 4) thereby meeting the limitations of the claims therefore the examiner believes that the rejection is proper.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/ROBERT SCRUGGS/

Examiner, Art Unit 3723

Conferees:

/Joseph J. Hail, III/

Supervisory Patent Examiner, Art Unit 3723

/Len Tran/

Supervisory Patent Examiner, Art Unit 3752